Veeva

Next-Generation Food Safety:
Proactively Ensuring Food Safety with Digital HACCP

Table of Contents

1. The Evolving Landscape of Food Safety and the Critical Need for Digital Transformation

Food safety is about protecting people and recognizing their fundamental right to safe food. Consumers inherently trust that the food industry will provide products that are safe for consumption. Yet, hundreds of millions are harmed each year by unsafe food.

The food industry has recognized this and embraced food safety as a non-competitive area to collaborate and safeguard the integrity of the global food supply.

Several pressing factors make it imperative to address food safety challenges today:

Loss of critical knowledge: As the largest generation of the labor force retires, companies face the risk of losing vital expertise, potentially leading to gaps in knowledge.

Innovations in foods: Fundamental innovations in foods to provide more sustainable alternatives—e.g., plant-based alternatives or insect proteins—might introduce novel materials with unknown hazards.

Climate change and global warming: These are reshaping risks, introducing new hazards and increasing the complexity of managing food safety.

Supply chain disruptions: Supply chain disruptions, including near-shoring and on-shoring trends, further complicate food safety management, highlighting the need for robust and adaptive solutions.

Erosion of consumer confidence: A 2024 poll indicates that 28% of consumers are not confident in the safety of the US food supply.

Cost of food recalls: The estimated average cost of a food recall is $10 million, in direct costs alone.

The Power of Digital Transformation in Food Safety

At Veeva - we believe that at the core of a vision of flawless food safety is a robust food safety culture—one in which every team member fully understands their vital role in protecting public health. To achieve this and navigate the evolving landscape, digital transformation is essential. Digital transformation allows for the deployment of software technologies specifically designed for food safety.

These tools offer automation, guidance, and oversight, thereby enhancing efficiency, reducing human error, and ensuring the consistent execution of food safety procedures. Cloud-based solutions offer unparalleled advantages, enabling rapid innovation and addressing the specific needs of the food industry with precision. Digital systems excel at processing vast amounts of data, identifying risks that might go undetected by human oversight, and empowering professionals to focus on critical decision-making and resolving complex issues.

2.Understanding HACCP: The Foundation for Food Safety

Hazard Analysis and Critical Control Point (HACCP) is a preventive food safety management system designed to identify, assess, and control hazards—biological, chemical, physical, and allergenic—throughout food production. It ensures food safety by establishing systematic monitoring and control measures at critical points in the process.

Effective HACCP implementation involves identifying potential hazards for a specific product or process, assessing their risks, and setting up preventive and corrective actions. A well-structured HACCP plan enhances food safety by systematically addressing risks before they impact consumers, ensuring compliance with industry regulations and best practices.

3. The History and Seven Principles of HACCP

The Hazard Analysis and Critical Control Point (HACCP) system was developed in the 1960s by Pillsbury, the U.S. Army, and NASA to ensure safe food for astronauts. The primary challenge was to eliminate foodborne hazards that could jeopardize missions, as traditional end-product testing was insufficient for guaranteeing food safety. Pillsbury pioneered a preventive, process-based approach that emphasized controlling risks at key stages of production rather than relying solely on final product inspection. This revolutionary concept was publicly introduced at the National Conference for Food Protection in 1971 and later adopted across the food industry.

Recognizing its effectiveness, HACCP became a global food safety standard. The Codex Alimentarius Commission, established by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO), formalized HACCP in the Codex General Principles of Food Hygiene. Today, Codex HACCP serves as the foundation for food safety regulations worldwide, requiring food producers to identify, monitor, and control hazards at critical points in production.

By integrating HACCP into food safety regulations, organizations worldwide align with Codex standards, ensuring uniformity, consumer protection, and international trade compliance.

1. **Hazard Analysis –** Identify potential food safety hazards (biological, chemical, physical, and allergenic) that could pose risks.

2. **Critical Control Points (CCPs) –** Determine key stages where hazards must be controlled to prevent, eliminate, or reduce them to safe levels.

3. **Critical Limits –** Establish measurable safety thresholds (e.g., temperature, pH, time) that must be maintained at each CCP.

4. **Monitoring Procedures –** Implement a system to consistently track and document whether CCPs remain under control.

5. **Corrective Actions –** Define steps to take when a deviation occurs to restore control and prevent unsafe food production.

6. **Verification Procedures –** Regularly audit and validate that HACCP measures are effectively controlling hazards.

7. **Record-Keeping and Documentation –** Maintain detailed logs to ensure compliance, traceability, and continuous improvement.

4. Limitations of Traditional HACCP Approaches

Outdated, manual food safety systems increase the risk of errors, highlighting the need for a more efficient, connected approach to prevent serious consequences. Managing the hidden hazards in the global food supply chain, particularly within production environments, requires strict adherence to well-designed procedures that are executed routinely to control these risks. However, traditional HACCP management methods remain fragmented and inefficient.

Many food and beverage (F&B) companies still rely on disconnected spreadsheets, local documents, and static templates to conduct HACCP studies. These studies are often stored in isolated systems, making them difficult to standardize across an enterprise. Without a unified approach, critical updates to HACCP plans may be delayed or inconsistently applied, increasing the risk of errors and compliance failures.

Challenges with Traditional HACCP Plan Management

HACCP plan management has historically been unstructured, often relying on:

Manual documentation: HACCP plans are stored in spreadsheets, word documents, or even paper-based records, making them difficult to update and share across sites.

Siloed systems: Each site or facility may have its own version of a HACCP plan, limiting enterprise-wide visibility and collaboration.

Inconsistent terminology and data formats: Free-text entries such as "foreign material - metal" vs. "metal foreign matter" create discrepancies that hinder effective cross-site hazard analysis.

Limited integration with other systems: HACCP plans are rarely linked to broader quality, compliance, or supply chain systems, making it harder to respond proactively to emerging risks.

Why Traditional HACCP Methods Fall Short

The continued reliance on manual record-keeping, outdated templates, and site-specific approaches creates major challenges:

- **Data silos and lack of visibility –** Critical HACCP data is often buried in documents rather than structured for real-time analysis.

- **Manual processes and inefficiencies –** Teams spend excessive time managing and updating HACCP records, reducing their ability to focus on proactive food safety improvements.

- **Difficulty in identifying emerging threats –** Static HACCP plans do not integrate with live data sources, making it harder to detect and address new risks in real time.

- **Increased risk of errors –** The lack of standardization and real-time connectivity can lead to inconsistent hazard control, putting food safety at risk.

Modern food safety requires a connected, digital-first approach to HACCP management. By transitioning from reactive, manual systems to a unified, cloud-based digital HACCP solution, companies can streamline their processes, improve data accuracy, and enhance compliance across their global operations.

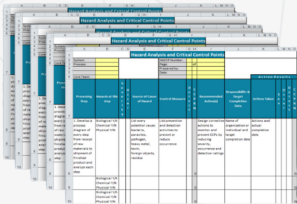# 5. How Veeva's Digital HACCP Solution Transforms Food Safety Management

Veeva's Digital HACCP Solution revolutionizes food safety management by empowering food and beverage companies to modernize and standardize HACCP plans at scale.

Designed to address industry-specific challenges, this cloud-based platform seamlessly integrates critical food safety processes, allowing businesses to create, manage, and optimize HACCP studies across multiple facilities and geographies.

By transitioning from traditional paper-based systems to a structured digital approach, Veeva enables organizations to proactively manage food safety risks, ensuring compliance, consistency, and efficiency across operations.

A Proactive and Predictive Approach to HACCP Management

Veeva's solution centralizes master data for hazards, risk severity and likelihood, control measures, and process steps. By eliminating data silos and reducing errors associated with manual data entry, the digital HACCP solution becomes a single source of truth at the core of food safety. Leveraging structured data will enable companies to efficiently manage their entire HACCP plan portfolio while maintaining compliance with regulatory frameworks, including the FSMA Food Safety Plan.

From Spreadsheets to Digital HACCP: Centralize with Veeva's HACCP plans, ensuring accuracy, consistency, and compliance.

Visual Hazard Analysis and Integrated Flow Diagrams

The system's drag-and-drop functionality allows users to create and modify flow diagrams directly in the digital HACCP plan solution. With the flow diagram's innovative side panel, hazards can be defined and assessed for each step. For significant hazards, a configurable HACP decision tree can be completed, and CCP and OPRP control measures can be defined, providing a comprehensive and interactive risk assessment tool.
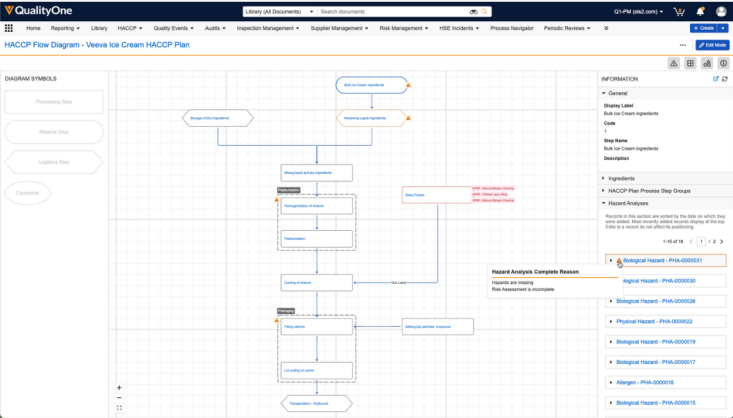
Enhanced Food Safety with Real-Time Hazard Analysis: Our intuitive side panel simplifies risk assessment by seamlessly linking hazards, controls, and process steps, ensuring compliance and safer food processing.

## Portfolio-Wide HACCP Oversight and Risk Mitigation

With integrated dashboards and reporting, businesses gain visibility into their entire HACCP plan portfolio. This enables companies to compare and analyze HACCP plans across multiple sites, identify inconsistencies, and proactively address potential risks. Real-time alerts provide early warnings of compliance gaps, ensuring timely intervention and enhanced food safety governance.

HACCP Portfolio Oversight Made Simple: Compare, standardize, and manage HACCP plans across facilities with real-time risk insights and data-driven decision-making.

# Design & Factory HACCP Plans for Seamless Knowledge Transfer

Veeva streamlines knowledge transfer between R&D and manufacturing through Design (reference) HACCP plans. Factories can derive their own HACCP plans from these templates, ensuring alignment with best practices and simplifying plan creation. The platform maintains linkages between design and factory plans, enabling effortless updates, comparisons, and standardization across the supply chain.
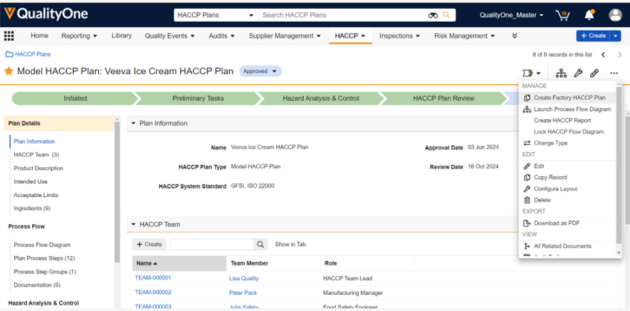
Seamless HACCP Plan Management: Efficiently create, manage, and compare Design and Factory HACCP plans, ensuring consistency, compliance, and streamlined knowledge transfer across facilities.

Supplier Verification for Supply Chain Safety

By integrating supplier management within the HACCP framework, Veeva enhances supply chain transparency. Built-in Supply Chain Applied Controls and Foreign Supplier Verification Program functionalities allow businesses to initiate and track supplier verification directly from HACCP and HARPC plans, ensuring compliance and reducing risk exposure.
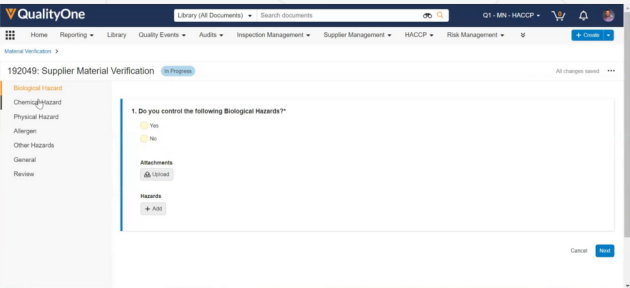
Initiate verification of suppliers from a HACCP/HARPC plan using the built-in Supply Chain Applied Controls & Foreign Supplier Verification functionalities.

Seamless Integrations for Data Integrity and Automation

Veeva's Digital HACCP Solution connects with ERP, PLM, and hazard early warning systems through integrations with technology partners such as iComplai and LineView. These integrations facilitate automated data retrieval, ensuring HACCP teams always have the most up-to-date information, reducing manual effort, and improving efficiency. Automated alerts notify teams of key updates, streamlining workflows and minimizing the risk of outdated data affecting food safety decisions.

The Future of Digital HACCP

Veeva's Digital HACCP Solution enhances the quality and trustworthiness of HACCP plans by implementing a structured data approach that ensures accuracy, consistency, and compliance. By reducing errors and omissions through automated data retrieval and validation, the platform minimizes risks associated with manual processes.

HACCP portfolio management capabilities allow users to report across and compare HACCP plans, ensuring uniformity while identifying potential gaps or inconsistencies. Additionally, the solution supports HARPC compliance, enabling businesses to integrate both traditional HACCP methodologies and FSMA preventive controls into a single, seamless system. At the core of Veeva's approach is its structured data model, which harmonizes hazard assessments, risk severity, and control measures, transforming food safety management from reactive to predictive.

6. Case Study: Nestlé's Journey Towards Connected Food Safety

Nestlé, the world's largest food and beverage company, operates in 188 countries, making food safety a top priority across its vast supply chain. To modernize its HACCP management and enhance operational efficiency, Nestlé has partnered with Veeva to co-develop the industry's first cloud-based digital HACCP solution.

By integrating automation and data-driven oversight, this solution enables Nestlé to streamline workflows, reduce risks, and respond more quickly to potential hazards. Key features such as an integrated flow diagram, structured study creation, automatic change notifications, and task reminders allow for greater agility in HACCP management. The result is improved governance, reduced errors, and enhanced visibility across food safety processes while still allowing for regional adaptablity.

> **"HACCP is at the core of everything we do and is the most complex part of food safety management in a big organization like Nestlé."**
>
> **"The new digital solution allows us to create, manage, and compare our HACCP studies more efficiently, helping us respond faster to changes and prevent safety issues before they escalate."**
>
> John Donaghy,
> Global Head of Food Safety at Nestlé.

This collaboration aims to set a new industry benchmark, as food safety is recognized as a non-competitive area within the industry. By leveraging Veeva's cloud-based platform and Nestlé's expertise, the digital HACCP solution is positioned to drive broader adoption, strengthening food safety management practices across the global food and beverage sector. **Learn more: read the press release.**

7. Implementing Veeva's Digital HACCP solution is a strategic move toward proactive food safety management

Partnering with Our Customers to Implement Digital HACCP

At Veeva, we collaborate closely with our customers to transform their HACCP processes into a fully digital, streamlined, and proactive system. Implementing Digital HACCP is more than just deploying technology—it's about modernizing food safety management with data-driven insights, seamless integration, and a culture of continuous improvement.

1. Define Clear Objectives and KPIs: Setting the Stage for Success
Success starts with aligning on strategic goals and measurable KPIs to track efficiency, compliance, and risk reduction. We work with customers to:

- Improve the quality & efficiency in HACCP plan creation
- Reduce audit findings and corrective actions
- Minimize food safety incidents through proactive risk management

2. Streamlining Data Collection & Integration
Accurate, real-time data is the foundation of Digital HACCP. Our solution integrates with ERP, PLM, and other enterprise systems to:

- Auto-populate HACCP studies with up-to-date finished product and ingredient data
- Compose hazard and risk information from ingredient hazard libraries
- Eliminate manual entry errors and enhance traceability
- Proactively identify hazard risks through automated alerts

3. Driving Adoption with Training & Change Management
User adoption is critical for success. We provide:

- Role-specific training and workshops
- Best practices for maximizing efficiency and collaboration
- Ongoing support to ensure seamless transition

4. Continuous Improvement & Optimization
HACCP is an evolving process. We help customers:

- Leverage real-time dashboards to monitor performance
- Use data insights to refine and enhance HACCP plans
- Adapt to regulatory changes and emerging risks

Ready to Take the First Steps? Getting Started with Veeva's Digital HACCP Solution

Veeva partners with food and beverage companies to modernize HACCP management through automation, real-time data integration, and proactive risk mitigation.

Our Digital HACCP solution streamlines data collection, enhances traceability, and ensures compliance with evolving food safety standards. We support seamless system integration, user training, and continuous optimization, helping teams work more efficiently and reduce audit findings, corrective actions, and safety incidents.

By embracing data-driven insights and best practices, companies can move from reactive to predictive food safety management. Are you ready to transform your food safety management practices and build a culture of proactive risk prevention?

The Veeva Vision: Seamless, Integrated Food Safety

We envision a world where outdated paper checklists and disjointed spreadsheets are replaced by fully integrated digital solutions. In this world, essential food safety processes— such as HACCP, prerequisite programs including sanitation, recall management, and allergen control—are all seamlessly integrated within a single platform. This system not only ensures flawless food safety with capabilities tailored specifically to food safety management but also incorporates quality management functions like auditing, non-conformance, CAPA and supplier management, providing a closed-loop solution that guarantees the highest standards.

The convergence of technological advancements and the maturation of automated, connected platforms presents an unprecedented opportunity for the food and beverage (F&B) industry to achieve this vision. Today, the "art of the possible" is within reach, as F&B companies increasingly recognize the value of digital transformation in driving greater effectiveness and efficiency in their food safety programs.

Our vision is clear; towards flawless food safety through the seamless collaboration of dedicated professionals and purpose-built software. Together, we will ensure that the safety of food is never compromised.

Veeva

Delight Your Consumers with Safe, Trusted, and Sustainable Products

industries.veeva.com/food-beverage